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| 10/528,331 | 03/18/2005 | Alexandr Mikhailovich Derevyagin | U 015623-3 | 6772 |

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NEW YORK, NY 10023

EXAMINER

JAGAN, MIRELLYS

ART UNIT PAPER NUMBER

2859

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/528,331

Applicant(s)

DEREVYAGIN ET AL.

Examiner

Mirellys Jagan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2006 and 13 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 8-10 is/are rejected.
- 7) ☒ Claim(s) 2, 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 3/18/05 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to in the references designated "AM", "AN", and "AS" has not been considered.

Claim Objections

2. Claims 1, 2, and 6-10 are objected to because of the following informalities:

In claim 1, the word "due" should be changed to --dew-- in line 4.

In claims 1 and 7, the claims state that there is no reflection in the absence of the condensate. However, this is not clear since the disclosure states that there is a reflection in the absence of the condensate, wherein the register is arranged so that the reflection is not received by the register in the absence of the condensate.

In claim 2, it is not clear if the 'condensate film' claimed in line 3 is referring to the 'condensate' referred to in line 11 of base claim 1; and if the measured phase difference is used to determine the thickness of the condensate film (see lines 3-4). Also, there is lack of antecedent basis in the claim for 'the phase difference' in lines 1-2, 'the studied gas' in line 5, and the gas having condensed admixtures (lines 5-6).

Claim 3 states that the cooling element is connected through an optical element to a radiator. Therefore, claim 3 is objected to because it is not clear what is meant by the term 'connected', e.g., is it physically connected to the optical element?

Claim 6 claims that the cooler and temperature sensor are mounted on 'a sampling tube'. However, a sampling tube is claimed in base claim 3. Therefore, claim 6 is objected to since it appears to state that there is a sampling tube in addition to the sampling tube claimed in base claim 3.

In claim 7, it is not clear if the 'condensate film' claimed in line 9 is referring to the 'condensate' referred to in line 7; and if the measured phase difference is used to determine the thickness of the condensate film (see lines 10-11). Also, there is lack of antecedent basis in the claim for 'the phase difference' in line 8, 'the studied gas' in line 12, and the gas having condensed admixtures (lines 11-13).

In claim 8, it is not clear if the condensate film is on the condensation surface (see last line).

In claim 9, it is not clear what element the word "it" is referring to in line 1, e.g., is 'it' referring to the 'device'? Also, it is not clear if the 'formed condensate' claimed in line 3 is referring to the 'condensate film' or 'condensate' referred to in base claim 8.

Claim 10 claims that the housing has a cooler and a temperature sensor. However, the housing having a cooler and temperature sensor is claimed in base claim 8. Therefore, claim 10 is objected to since it appears to state that there is a cooler and temperature sensor in addition to the cooler and temperature sensor claimed in base claim 8.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3-6 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

Claim 3 omits the structural cooperative relationship between: 1) the register, cooler, and temperature sensor, and 2) the cooled element. The structural cooperative relationship between the register, cooler, and temperature sensor, with the cooled element is essential since the cooled element cannot measure dew point without the register, cooler, and temperature sensor.

Claims 4-6 are rejected for being dependent on rejected base claim 3.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,022,045 to Elliot in view of the publication titled "A Dielectric Omnidirectional Reflector" by Fink et al [hereinafter Fink].

Elliot discloses a method for dew point measurement, comprising:

feeding gas to be studied onto a cooled mirror with a condensation surface onto which a light flux is incident; and

measuring the dew point from a value of reflection of the light flux from the condensation surface, advent of the dew point being determined on the basis of the registered value;

characterized in that the light flux is polarized in a plane of the incidence, and an angle of the incidence is selected so that there is no reflection of the light flux in the absence of a condensate from the condensation surface (see figure 8; column 4, lines 39-43 and 53-60; column 5, lines 4-8 and 15-36; column 5, lines 52-68; and column 9, lines 13-49).

Elliot does not explicitly disclose the material of the mirror, and therefore does not disclose it being made of a dielectric material.

However, Fink discloses that a dielectric mirror is known to be used in the art instead of metallic mirrors because dielectric mirrors reflect light with extremely low loss, i.e., dielectric mirrors are more reflective than metallic mirrors (see page 1679, last 15 lines).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and device of Elliot by replacing the mirror with a dielectric mirror, as disclosed by Fink, in order to provide a more reflective mirror.

8. Claims 3, 4, 6, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,701,052 to Schoen et al [hereinafter Schoen] in view of the prior art disclosed by Applicant in the preamble of claim 3 [hereinafter Prior Art].

Schoen discloses a device for dew point measurement comprising:

a cooled mirror (10) provided with a condensation surface and connected through an optical element (27) to a radiator (16);

a register (18);

a cooler; and

a temperature sensor;

wherein the cooled mirror has a condensation surface plate, and the radiator is a source of light polarized in a plane of incidence on the condensation surface at an angle about equal to the Brewster angle of the condensation surface (when it has condensation); and the angle is within the range of $\pm 9^\circ$ of the value of the Brewster's angle.

Furthermore, Schoen teaches that directing polarized light on a dielectric surface at an angle equal to Brewster's angle results in a reflected beam that is linearly polarized in a direction perpendicular to the plane of incidence, and that condensation behaves as a dielectric since the reflected beam is linearly polarized in a direction perpendicular to the plane of incidence when

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polarized light is directed on it at an angle equal to Brewster's angle (see column 3, lines 3-6 and 13-15).

Schoen does not disclose the device being contained in a housing, wherein the housing contains a sampling tube, the mirror, optical element, radiator, register, cooler, and temperature sensor; and the cooler and the temperature sensor being mounted on the sampling tube.

However, the Prior Art teaches that a dew point measurement device is known to comprise a housing equipped with a sampling tube and containing a cooled element provided with a condensation surface connected through an optical element to a radiator, a register, cooler, and temperature sensor.

Therefore, referring to claims 3 and 8, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Schoen by containing the device in a housing as taught by the Prior Art in order to protect the device elements.

Further referring to claims 4 and 8, the angle of the polarized light of the Schoen reference is at the Brewster's angle, which lies within the claimed range.

Referring to claims 6 and 10, the location of the cooler and the temperature sensor claimed by applicant, i.e., on the sampling tube, is considered to be nothing more than a design choice since the particular location claimed by applicant is nothing more than one of numerous locations in the housing that a person having ordinary skill in the art at the time the invention was made would have been able to provide in order to measure dew point as already suggested by Schoen and the Prior Art.

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9. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoen and the Prior Art, applied to claims 3, 4, 6, 8, and 10 above, and further in view of U.S. Patent 5,052,818 to Nishazawa et al [hereinafter Nishazawa].

Schoen and the Prior Art disclose a device having all of the limitations of claims 5 and 9, as stated above in paragraph 8, except the device being provided with at least one additional register serving for measurement of scattered beams reflected from the surface of the formed condensate.

Nishazawa discloses an apparatus for measuring dew point comprising a housing containing a cooled element provided with a condensation surface and connected through an optical element to a radiator, a register, cooler and temperature sensor, wherein the device may have more than one register for increasing measurement sensitivity (see column 5, lines 5-28 and 55-60; column 6, lines 29-48; column 6, line 55-column 7, line 2; column 8, line 65-column 9, line 11; and column 10, lines 5-12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Schoen and the Prior Art by providing an additional register since Nishazawa teaches that additional registers are useful for increasing measurement sensitivity.

Allowable Subject Matter

10. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and amended to overcome the objections set forth in this Office action.

11. Claim 7 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.

12. The Examiner's statement of reasons for the indication of allowable subject matter for claim 2 is stated in the Office action dated 6/26/06.

13. The following is a statement of reasons for the indication of allowable subject matter for claim 7:

The prior art of record does not disclose or suggest the following in combination with the remaining limitations of the claims:

A method for dew point measurement characterized in that the concentration of condensed admixtures in a predetermined volume of the studied gas is determined on the basis of the value of the thickness of the film formed during a certain period of time.

Response to Arguments

14. Applicant's arguments filed 9/29/06 have been fully considered but they are moot in view of the new grounds of rejection.

Conclusion

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mirellys Jagan whose telephone number is 571-272-2247. The examiner can normally be reached on Monday-Friday from 11AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJ
January 31, 2007



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